

AMENDMENTS TO THE CLAIMS

1. (currently amended) A method for assaying homocysteine (Hcy) in a sample ~~without chromatographic separation~~, which method comprises:

a) contacting a sample containing or suspected of containing Hcy with a Hcy co-substrate and a Hcy converting enzyme in a Hcy conversion reaction to form a Hcy conversion product and a Hcy co-substrate conversion product, wherein the Hcy co-substrate is S-adenosylmethionine (SAM), the Hcy converting enzyme is a S-adenosylmethionine (SAM)-dependent homocysteine S-methyltransferase, the Hcy conversion product is methionine (Met) and the Hcy co-substrate conversion product is S-adenosyl-L-homocysteine (SAH);

b) ~~assessing the Hcy co-substrate conversion product SAH generated in step (a) by~~ contacting the SAH generated in step (a) with a SAH hydrolase to generate Hcy ~~from SAM~~, which is cycled into the Hcy conversion reaction by the SAM-dependent homocysteine S-methyltransferase to form a Hcy co-substrate based enzyme cycling reaction system, and adenosine (Ado), which is assessed to determine the presence, absence and/or amount of the Hcy in the sample.

2. (currently amended) The method of claim 1, wherein the Ado is assessed by ~~contacted~~ contacting the Ado with an adenosine converting enzyme other than the SAH hydrolase.

3. (original) The method of claim 2, wherein the assessment of the Ado is effected indirectly by assessment of a co-substrate or a reaction product of adenosine conversion by the adenosine converting enzyme.

4. (original) The method of claim 3, wherein the adenosine converting enzyme is an adenosine kinase.

5. (original) The method of claim 3, wherein the adenosine converting enzyme is an adenosine deaminase.

6. (original) The method of claim 1, wherein the sample is a body fluid or a biological tissue.

7. (original) The method of claim 6, wherein the body fluid is selected from the group consisting of urine, blood, plasma, serum, saliva, semen, stool, sputum, cerebral spinal fluid, tears, mucus and amniotic fluid.

8. (original) The method of claim 6, wherein the body fluid is blood.

9. (currently amended) The method of claim 8, wherein the blood sample is further separated into a plasma or serum fraction.

10. (original) The method of claim 1, wherein prior to or concurrently with the contact between the sample and the Hcy co-substrate and the Hcy converting enzyme, oxidized or conjugated Hcy in the sample is converted into reduced Hcy.

11. (original) The method of claim 1, wherein the Ado is assessed without chromatographic separation.

12. (original) The method of claim 1, wherein the SAM is added to the sample.

13. (original) The method of claim 1, wherein the SAM is produced from ATP and Met by a SAM synthase.

14-17. (canceled)

18. (currently amended) A kit for assaying Hcy in a sample, which kit comprises:

- a) a S-adenosylmethionine (SAM)- dependent homocysteine S-methyltransferase;
- b) S-adenosylmethionine (SAM)₂ or ATP, Met and a SAM synthase;
- c) a SAH hydrolase; and

d) a reagent for assessing adenosine (Ado).

19. (original) The kit of claim 18, wherein the reagent for assessing Ado comprises an adenosine converting enzyme other than the SAH hydrolase.

20. (currently amended) The kit of claim ~~18~~ 19, wherein the adenosine converting enzyme is an adenosine kinase or an adenosine deaminase.

21. (canceled)

22. (new) The method of claim 1, wherein the homocysteine in the sample is assayed without chromatographic separation.

23. (new) The kit of claim 18, which further comprises an instruction for performing a method for assaying homocysteine (Hcy) in a sample, which method comprises:

a) contacting a sample containing or suspected of containing Hcy with a Hcy co-substrate and a Hcy converting enzyme in a Hcy conversion reaction to form a Hcy conversion product and a Hcy co-substrate conversion product, wherein the Hcy co-substrate is S-adenosylmethionine (SAM), the Hcy converting enzyme is a S-adenosylmethionine (SAM)-dependent homocysteine S-methyltransferase, the Hcy conversion product is methionine (Met) and the Hcy co-substrate conversion product is S-adenosyl-L-homocysteine (SAH);

b) contacting the SAH generated in step (a) with a SAH hydrolase to generate Hcy, which is cycled into the Hcy conversion reaction by the SAM-dependent homocysteine S-methyltransferase to form a Hcy co-substrate based enzyme cycling reaction system, and adenosine (Ado), which is assessed to determine the presence, absence and/or amount of the Hcy in the sample.

24. (new) The kit of claim 18, wherein at least one of the S-adenosylmethionine (SAM)-dependent homocysteine S-methyltransferase, S-adenosylmethionine (SAM), ATP, Met,

the SAM synthase, the SAH hydrolase, and/or the reagent for assessing adenosine (Ado) is packaged in a container.

25. (new) The kit of claim 24, wherein the container is a glass or plastic container.